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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/862,982	05/22/2001	Dan F. Ammar	26961	7520

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EXAMINER

LEE, EUGENE

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/862,982

Applicant(s)

AMMAR, DAN F.

Examiner

Eugene Lee

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 thru 3, and 6 thru 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner et al. '286 in view of Koizumi et al. '927, and further in view of Goto et al. '074. Ziegner discloses (see, for example, FIG. 11) a packaged integrated circuit (microwave integrated circuit (MMIC) package) comprising a millimeter wave circuit (MMIC) 32a, base (base plate) 22a, and cover (chip cover) 24a. The end portions of the base plate and cover engage with each other to form the total housing. In column 3, lines 51-56, Ziegner discloses that the base and integrated circuit are substantially thermally matched. Ziegner does not disclose a solder preform contained on the base plate, said MMIC being mounted on the solder perform. However, Koizumi discloses (see, for example, Fig. 2) a high-frequency device package comprising MIC 1 mounted on a base 2 by way of solder. See, for example, column 3, lines 23-25. Therefore it would have been obvious to use a solder perform in Ziegner's invention in order to stably attach the base to the millimeter wave circuit.

Ziegner in view of Koizumi does not disclose a microwave monolithic integrated circuit package wherein any pads on said MMIC are exposed for wire and ribbon bonding thereto. However, Goto discloses (see, for example, FIG. 9) a microwave semiconductor device comprising a GaAs substrate (chip) and lid (cover) 40f. The lid has through holes 40h which

expose the GaAs substrate and permit waveguides 12a, 12h to connect to the GaAs substrate externally. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to put holes in the cover of Ziegner in view of Koizumi and expose the MMIC for wire and ribbon bonding thereto in order to connect the chip externally to other devices.

Regarding claim 2, see, for example, column 3, lines 47-48 of Ziegner.

Regarding claims 3 and 12, Ziegner in view of Koizumi in view of Goto discloses the claimed invention except for said base plate being about 10 to about 15 mil thick. However, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use this range, since such a thickness would capably support a chip and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding claims 6 and 13, Ziegner in view of Koizumi in view of Goto discloses the claimed invention except for the solder preform being about 1 to 2 mil thick. It would have been obvious to one of ordinary skill in the art at the time of invention was made to use this range, since such a thickness would capable connect the chip to the base and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner '286 in view of Koizumi '927 in view of Goto '074 as applied to claims 1 thru 3, and 6 thru 15 above, and further in view of Harris et al. '171. Ziegner in view of Koizumi in view of Goto does not disclose the chip cover being made of plastic. However, Harris discloses a semiconductor

package comprising a die 110, base 102 and lid (cover) 104. The lid is made of plastic and protects the die from the environment. See, for example, column 2, lines 56-58. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use plastic for the cover in order to reliably protect the chip from the environment.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ziegner '286 in view of Koizumi '927 in view of Goto '074 as applied to claims 1 thru 3, and 6 thru 15 above, and further in view of Hayakawa '754. Ziegner in view of Koizumi in view of Goto does not disclose said solder perform being formed from a gold-tin alloy. However, Hayakawa discloses (see, for example, FIG. 2) a high-frequency semiconductor device comprising chips 41, 42, and base 1. The chips are attached to the base by a Au-Sn solder. See, for example, column 3, lines 3-5. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to use a gold-tin alloy in order to a reliably attach a chip to a base.

Response to Arguments

5. Applicant's arguments filed 2/24/03 have been fully considered but they are not persuasive.

Regarding the applicant's argument on page 8, second paragraph that Ziegner nowhere suggests a single MMIC (microwave monolithic integrated circuit) chip package, this argument is found not persuasive because Ziegner clearly does show a single MMIC 32a. See, for example, FIG. 11, wherein Ziegner shows a single MMIC 32a that lies on a base 22a and cover 24a. The applicant's argument that many components and die form a large circuit with multiple

chips is not persuasive due to the fact that the Ziegner has identified the whole element 32a as a millimeter wave circuit and therefore, as clearly shown in FIG. 11, there is only ONE element 32a, not two or multiple. Also, see, for example, column 7, lines 38-43, wherein Ziegner states that there is only one millimeter wave circuit (MMIC) 32a.

Regarding applicant's argument on page 11, second paragraph that Goto fails to describe how the MMIC chip DC and ground connection can be achieved, this argument is found not persuasive. Goto clearly shows a microwave IC chip 100b that is connected to waveguides 12a, 12b. The waveguides make a connection to the microwave IC chip by the holes 40h in the lid 40f. Therefore, Goto clearly does show how the connections are made between the MMIC chip and DC and ground connections.

Regarding applicant's argument on page 12, first paragraph that Harris does not disclose MMICs, this argument is found not persuasive. Harris is simply used to state that plastic is one of many materials used to form chip covers in semiconductor devices. However, for the sake of arguendo, Harris does disclose (see, for example, column 2, lines 8-10) that the semiconductor device is a very high frequency microelectronic semiconductor device such as a microwave circuit.

Regarding applicant's argument on page 12, second paragraph that Hayakawa discloses a semiconductor device for amplifying microwave signals, this argument is found not persuasive. Hayakawa is simply used to state that a gold-tin alloy is one of many materials used to form a solder preform in semiconductor devices. Therefore, whether the device is for amplifying microwave signals or protecting a voltage surge, etc., it does not affect the fact that gold-tin alloy is one of many materials used to form a solder preform.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

INFORMATION ON HOW TO CONTACT THE USPTO

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eugene Lee whose telephone number is 703-305-5695. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 703-308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Eugene Lee
May 14, 2003



ALLAN R. WILSON
PRIMARY EXAMINER